

ELEMENTALS ANALYSIS OF CHINESE TRADITIONAL HERBS USING INSTRUMENTAL NEUTRON ACTIVATION ANALYSIS TECHNIQUE

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Herbs have been used as food supplements and also as alternative medicine to some ethnic groups. Traditional Chinese herbs were popular among Chinese and were claimed to have potential of curing diseases if taken at the appropriate dosage. This study was to investigate the elemental contents of these herbs.

Ten Chinese traditional herbs were chosen. They are *Angelicae sinensis*, *Chrysanthemi flos*, *Cnidii rhizoma*, *Codonopsis radix*, *Gingseng*, *Glycyrrhizae uralensis*, *Hedyotis diffasae*, *Lonicerae flos*, *Fructue melia toosendan* and *Scutellariae barbatae*. The samples were dried at 80°C for one hour in the oven and homogenized with mortar and pestle. The samples were then irradiated in TRIGA MkII reactor and counted using HPGe detector couple to Multi Channel Analyzer (MCA) system.

A total of sixteen elements including major and trace elements were determined by this techniques. Na and K were determined in all the samples, where as Au, Br, Ce, Co, Cr, Fe, Hf, K40, La, Lu, Sc, Sm, Tb and Zn were presents in certain plants only. *Hedyotis diffasae* which is used to reduce heat in the body, improve blood circulations and also jaundice is the only sample that contains most of the elements; ie. Ce (27.095 µg/g), Co (0.879 µg/g), Fe (0.002 µg/g), Hf (1.446 µg/g), La (19.092 µg/g), Lu (0.118 µg/g), Sc (0.994 µg/g), and Tb (0.557 µg/g).

Three of these herbs (*Fructus melia toosendan*, *Angelicae sinensis* and *Glycyrrhizae uralensis*) have been tested by Ames Test to screen the present of mutagens in these herbs. The results showed that *Fructus melia toosendan*, *Angelicae sinensis* and *Glycyrrhizae uralensi* showed some mutagenic effect if using at concentrations higher than 12.5 mg/ml, 500 mg/ml and 250 mg/ml, respectively.